
Thoughts on the Medium Machinegun For the Light Infantry Company

CAPTAIN MATTHEW M. CANFIELD

EDITOR'S NOTE: This article, a companion piece to Major Baldwin's article (page 7), offers a useful perspective on the employment of machineguns and the training of their crews. I realize that the subject of machineguns is one that infantrymen take very seriously, and I would like to get your comments on what these authors have to say, as well as your thoughts on the role of this weapon in the future.

The commander of today's light infantry company must have the firepower of a medium machinegun. And he must be able to use it to gain the offensive punch he needs to win decisive victories on the modern battlefield.

In World War I, the style of warfare dictated the way machineguns were used. That war, characterized primarily by trench fighting, involved the concept of massing fires. Artillery fires were massed to support soldiers, who were also massed to form great frontal assaults from the trenches. Machineguns were easy to mass because they were organized into platoons, companies, and battalions, which were then used as separate support units.

In the offense, they were used to support the assault troops and were occasionally used in the actual assault as well. The tactics and techniques of machinegunning reached full maturation in this war. Especially the proper use of sighting and laying instruments and employing fires to gain the greatest tactical advantage.

In World War II, machineguns were used in much the same way, even though new tactics, weapons, and technologies

resulted in deeper battles at a faster tempo. Large-scale armor warfare, better weapons, the emergence of close air support, long-range aerial bombing, and a general avoidance of massed frontal assaults were all significant departures from the way World War I was fought. Machineguns were still organized into separate elements to support attacking infantry. Medium and

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heavy machineguns proved their worth time and again in city fighting, rugged mountainous terrain, and tropical jungles.

During the 1960s, the country was in the middle of a very real cold war, and the rules were different. Threat forces were arrayed into numerous armored, mechanized, and motorized divisions. There were nuclear weapons. Close air support was increasingly effective as great leaps in technology allowed the rifle company commander to call for missions of destruction.

This was an "out with the old, in with the new" era. We had a great desire to modernize and improve the Army. Thus, when we reevaluated our doctrine and tactics, a decision was made to put the medium machinegun directly in the hands of the rifle company commander

as an organic company asset and to eliminate separate machinegun support units. Unfortunately, when the machinegun battalions were phased out, machinegunning as a science was no longer emphasized.

The M60 7.62mm machinegun replaced the Browning .30 caliber as the medium machinegun. It was intended for use as a direct-fire infantry support weapon, but no doctrine, tactics, or manuals provided instruction for its use as an indirect fire weapon. The machinegun field manual (FM 23-67, 1962) did, however, discuss the employment of the weapon from position defilade. When the gun and its crew are hidden from enemy ground observation by an obstacle such as the crest of a hill, the fires are adjusted by an observer positioned at or near the gun who can see the target. Since the machinegun is still laid in using the direct-lay technique, however, this is not considered indirect firing.

At the same time, the automatic assault rifle went through its own changes. In World War II and the Korean War, the Browning automatic rifle (BAR) gave the infantry platoon instantaneous automatic weapon fire. In Vietnam, the designated automatic rifleman carried an M14 (with extra ammunition) set up for full automatic fire. Later, the M16 was fielded and served the same purpose.

For the past 30 years, the rifle company has had fire teams with automatic riflemen, supplemented by organic medium machineguns. This system is in the process of being changed. The automatic rifleman has traded in his M16 for the M249 light machinegun,

and the need for a medium machinegun in the rifle company is being questioned.

To keep the machinegun from being confused with an automatic assault weapon, it is important that we define "machinegun" and explain its concept. A machinegun, for purposes of this article, is defined as a crew-served system intended to support the infantry. I will discuss the machinegun only as it applies to the offense and will not deal with the best way to organize the guns into the infantry company and battalion tables of organization and equipment. That is the subject of an entirely separate effort. Let the need for a medium machinegun in the rifle company be firmly established as the first priority. Once this is done, organizing it within the battalion will not be difficult.

In recent years, the Army has been trying to field the M249 in place of the venerable M60 machinegun. This is potentially a disastrous mistake if we are substituting an automatic assault weapon for a crew-served machinegun system at company level. The essential role of the infantry company has not changed substantially in more than 100 years: to seek out, close with, and destroy the enemy by fire and maneuver or to repel the enemy assault by fire and close combat. Therefore, the role of machineguns in support of the infantry remains the same: to assist the advance of the infantry by firepower throughout the fight. Therefore, there can be no good argument for eliminating the crew-served machinegun from the infantry company.

If the intent is to substitute the M249 as a light crew-served machinegun for the medium machinegun, then a study must be initiated to examine the efficacy of a light machinegun in support of the infantry attack. Ballistic studies have determined that the improved ammunition for the M249 now has penetration capability comparable with that of the M60 ammunition. For purposes of this article, therefore, we will assume that the reliability, ammunition requirements, and barrel life are, again, comparable.

What, then, can be used to determine that a light machinegun is not enough and that a medium machinegun is needed in the rifle company? The answer is: the psychological effect on the enemy of a medium or heavy machinegun, and the boost in morale that it provides to friendly troops in the attack—an effect a light machinegun can never provide. The problem is how to measure this effect. It should be enough to listen to the experiences of men who have served in combat and who will testify to the positive influence the big guns had on their morale and the negative effect suffered when they were on the receiving end of enemy machinegun fire.

Unfortunately, the drama of human emotion is difficult to quantify, and it is

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impossible to establish through scientific empirical data. Therefore, it tends to be dismissed as mere opinion and insupportable through research. This is a tremendous mistake. The psychological effect of a medium or heavy machinegun should be all the justification needed to keep a medium machinegun in the rifle company arsenal.

Another argument currently in vogue is that before we can establish a need for a medium machinegun we must identify a legitimate threat that requires it and for which a light machinegun will not be sufficient. It has been successfully argued that there is no current threat that cannot be met more than adequately with a light machinegun. Remembering, of course, that ballistic improvements to M249 ammunition support this assertion, the remaining questions are: What threat? Where? and When?

I hope the authors of this opinion have not used our experience in the

Persian Gulf War to support their argument. That was primarily an armor war of maneuver and therefore cannot possibly support a study of the medium machinegun in the rifle company offense. U.S. involvement in Somalia is another poor case study. This was a peacekeeping mission. It was not a war, not an offensive, and the experience of light infantry companies in the attack was limited. We must remember how the M249 was employed. It was primarily an automatic weapon that performed as part of a squad—a "street sweeper" if you will. It was not used as a crew-served weapon that supported the infantry in the attack. Therefore, performance data on the M249 in peacekeeping operations cannot be used to support an argument for its suitability to replace the medium machinegun in the rifle company.

The solution to the problem of justifying the need for a medium machinegun in the light infantry is actually quite simple: We must modify our employment tactics and rewrite our doctrine to support them. Specifically, we need to make machinegunning both an art and a science. And we must relearn the technique of employing the guns effectively in the indirect fire mode. This will prove to be a major issue in the near future.

New and exotic weapons that are now being developed will make it critical that we be able to mask our troops and weapon systems. For example, there will be weapons that will emit a flash of energy that will temporarily blind soldiers on the battlefield. Fighting positions designed to protect soldiers from artillery, shrapnel, and direct enemy fire will not protect the eyes of the soldier who still needs to see the enemy to shoot him. We need to reconsider our fighting tactics in the face of this new threat. One way to do this will be to develop ways to engage the enemy from protected positions that will enable us to fight him without actually seeing him. Indirect machinegun fire is an ideal way to accomplish this task.

Indirect fire with machineguns is the practice of firing at a target while using a sight setting and aiming point that dif-

fer from those offered by the objective itself. The target may or may not be visible to the gunner. Various methods of employing indirect fire are firing over friendly troops, firing at night, and using auxiliary aiming points. Indirect fire may be carried out by guns controlled one at a time—in which the line of fire of each is laid out separately without reference to the line of fire of another gun—or together (by sections, for example), in which case the lines of fire of the guns constituting the section are laid out in parallel directions and form a basis from which the controlling officer can issue an order producing distribution of fire along any line and concentration of fire on any locality.

Indirect fire offers several advantages:

- The guns are screened from hostile fire.
 - Firing indirectly gives the crew a feeling of security and confidence.
 - Fire is mechanical.
 - The guns may be put into action unobserved and under cover.
 - Ammunition resupply is simplified.
 - The position of the guns may be changed without the enemy being aware of the change. Once a gun is located, it is lost.
 - The muzzle flash of guns (especially at night) is masked from the enemy.
 - There is a good line of retirement in withdrawal actions.
 - It allows the guns to be used as long-range weapons.
 - Gun positions may be held for a longer period of time.
- At the same time, however, indirect fire has some disadvantages:
- It takes time to adjust fire, both in laying in the guns and in bringing fire to bear on a target.
 - It requires skills that must be developed and trained.
 - The ground in the immediate front of the mask is not covered by the guns firing over the mask, thus creating a dead space that other weapons must cover.
 - Moving targets may not be covered readily by indirect fire.
 - Unlike artillery and mortars, the

machinegun sheaf is difficult to adjust in relation to the target because the impact of the round is difficult to see, especially at long range, where the tracers tend to burn out before reaching the target.

The science of indirect fires is virtually identical to that of artillery fires. Machineguns are laid in with respect to deflection (direction), elevation, and clearance of mask or friendly troops—or simply orienting the guns toward a target using the correct elevation and deflection. When the correct data are applied and no mask interferes, the target will be hit.

The guns may be laid for deflection by using a magnetic azimuth or an initial aiming point (IAP). The theory of laying a gun for deflection is based on

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the fact that, although the target is unobserved by the gunner, the direction of the target from a constant—such as magnetic north—can be determined by using a compass (aiming circle). If an object such as a tower or a hilltop can be observed as an IAP, then the direction of the target can be determined using the IAP as the constant. Elevation is determined by using a measuring device to get the angle of the barrel. A map, or visual estimation, may be used to determine range. Tables can be provided that determine the elevation required for specific distances. Ammunition requirements for various targets can be established; for example, the number of rounds per gun to engage a platoon of troops in the open to achieve a minimum level of destruction.

Indirect fires in the attack should be planned, as with artillery, and they should supplement artillery support, not replace it. These fires can be used to cover flanks, interdict routes of likely enemy advances, neutralize enemy posi-

tions, and harass the enemy's communications. The guns can be organized into "batteries" to deliver machinegun "barrages" and—limited only by their range—can support the infantry in many of the instances where artillery is used.

Direct fire should be used, of course, when the situation permits and when the potential for results is greater than it is with indirect fire. The greatest advantage of direct fire is the speed with which it can be employed. It allows direct observation of the impact of the rounds, which makes it easier to use close to troops. And it is highly effective against moving mounted or mechanized troops, vehicles, and hostile aircraft.

A medium machinegun will provide an operational capability for indirect fire that a light machinegun cannot. By trying to incorporate the techniques of indirect machinegun fire into the tactics of the light infantry company, we are seeking a way to condense infantry fire on a designated target to support the maneuver company.

The M240 7.62mm machinegun is the ideal one for the light infantry, and it should be used to replace the M60. It has a maximum effective range of 1,800 meters and, with its sustained fire (SF) kit, can be used for an approximation of indirect fire called "map-predicted" fire. This is where the guns engage targets indirectly but without the use of dedicated laying and sighting instruments like those used for the .30 caliber machinegun. Instead, a single instrument mounted on the gun (the "C2" sight, which is almost identical to a mortar sight) performs the function of setting deflection and elevation. The azimuth to the target in degrees is converted to mils and dialed directly onto the sight. Elevation is set the same way. Aiming stakes are used as they are for mortars—to maintain a constant point of sight reference. The map-predicted firing technique, like artillery, is most effective when the guns register their fires. Distances can be estimated from a map or from such specialized instruments as a laser range finder. Forward observers use the same method in calling for and adjusting the

machinegun round that is used when calling for artillery and mortars.

The U.S. Army Rangers were first issued the M240 two years ago but without the SF kit. When the SF kits were subsequently issued, Ranger units received training on the technique of map-predicted fires from the British, who were already using the M240 with SF kit. But this was only familiarization training because the U.S. Army had not yet purchased these kits. Therefore, the Rangers were unable to use the M240 in the map-predicted fire mode.

The M240 with the SF kit increases the maximum effective range of the gun to 2,700 meters. Tracer burnout occurs at 2,000 meters, which can make it harder to see the rounds and adjust them at greater distances. Experience has shown that the effect of the rounds on the target, such as flying sparks or kicked-up dust, can be visible enough to allow for adjustment of the sheaf. The tripod that comes with the SF kit allows for three firing positions—sitting, kneeling, and prone. Naturally, the gun barrel can be elevated to an angle sharp enough to allow for high-angle fires.

Initial feedback indicates that map-predicted fires can be ideal under the appropriate circumstances, but there are some drawbacks: Employing map-predicted fires is time-consuming. The highly perishable skills of the forward observer and the gunner require a great

deal of sustainment training. The SF kit weighs about 40 pounds, and transporting it can be difficult, especially on long foot movements and airborne operations. The accuracy of the sheaf is entirely dependent upon the skills of the machinegun section. Nonetheless, map-predicted fires can be effective and accurate when performed by well-trained and highly skilled soldiers.

If the Army is willing to buy and field the M240 machinegun with SF kit, some basic changes will need to be made in training. For example:

- Establish a military occupational specialty or a special skill identifier for machinegunners, including medium and heavy (.50 caliber and MK 19 40mm grenade machinegun). Or, at the very least, assign the gunner duties to sergeants.

- Establish minimum qualification criteria, minimum sustainment training, and familiarization standards for gunners using all firing techniques.

- Establish doctrine and tactics for machineguns, stressing their inherent potential as combat multipliers.

- Train junior officers and NCOs on gunnery tactics and techniques.

- Rewrite the machinegun manuals and include tables, technical data, tactical employment techniques, and maintenance.

- Incorporate all the techniques for direct fires or map-predicted fires into

the tactical employment of all our medium and heavy machineguns—especially the MK 19.

- Build adequate machinegun ranges that require gunners to fire directly, indirectly, singly, and in sections.

- Allocate enough ammunition for this type of training.

- Teach all infantry soldiers, as a common task, the forward observer skills of adjusting machinegun rounds.

We must also think ahead about how to use the company medium machineguns on tomorrow's battlefield. We must plan for indirect machinegun fires in an environment of directed energy weapons. We can easily develop machinegun tactics that will make them an integral part of our combined arms doctrine. The point is that the machinegun will be needed just as much in the future as it is today. And instead of thinking of how to replace it, we should be thinking of how we can enhance the effectiveness of new technologies with weapons and tactics that have stood the test of time.

Captain Matthew M. Canfield commands a company in the 1st Battalion, 503d Infantry, in Korea. He previously led rifle and mortar platoons in the 3d Infantry, in addition to prior service in the U.S. Marine Corps. He is a 1987 ROTC graduate of the University of Florida.

Load-Bearing System For the 21st Century Land Warrior

COLONEL MORRIS E. PRICE, JR.
MAJOR ALLEN L. BORGARDS

Carrying loads efficiently has challenged infantrymen since the beginning of organized warfare, and they have always found a way to "make do" with

whatever equipment was provided. Two programs now seek to break this pattern: The 21st Century Land Warrior Integrated Technology Program and the

Generation II (GEN II) Soldier System Advanced Technology Demonstration (ATD).

On the digitized battlefield of the 21st